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MARCH 2022

2022 WQA Convention Schedule

Brine Reuse with the Elution Curve

Water Filtration—Counting the Ways

Infrastructure Legislation

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Booth #837
April 6-8, 2022
Orlando, FL

INNOVATION • INTEGRITY • SUPPORT • PARTNERSHIP

Guest Viewpoint

By Pauli Undesser

Welcome to the 2022 WQA Convention

As we prepare for the WQA Convention & Exposition in Orlando (April 6-8), we're building on the interest and excitement that we saw in Las Vegas, NV, last summer. WQA's Convention in July was one of the first large in-person gatherings in the US, in light of the pandemic. Just being able to get together face-to-face started the excitement and energy.

The quality of topics and the raw authenticity of speakers generated enthusiasm that rippled throughout the industry even for those who could not attend in person. WQA staff and volunteers really stepped up and brought forward relevant content with an engaging mix of speakers and presentation styles. Just six weeks later, our Mid-Year Leadership Conference was held in Oak Brook, IL. Again, industry leaders met in person and were able to discuss important topics and trends.

It was last spring that we launched the Grand Opening of our new international headquarters and laboratory, which was due in no small part to the generous contributions we received from member companies in our Building Our Vision campaign. When I think back to all of the virtual meetings and having to wear my hard hat on site during construction, it's amazing to see how far we've come and the resulting productivity for staff, as well as product testing and certification capabilities that are second to none in the industry. The new facility has become a catalyst for the association and the industry.

And that brings us to the 2022 Convention and its theme: Impact. This is the year our members (and more broadly the industry) can have a real impact on quality water around the world. Each of us, in every community, is meeting ever greater water challenges. We need to work together, with the training and education, the resources and the opportunity to meet in person that WQA provides.

I'm really excited about unveiling WQA's 2022-2024 Strategic Plan at Convention. This strategic plan is set up for success because of the expanded capabilities of our new facility and the strength of our membership. There are three overarching strategic goals:

> **GOAL 1: Advancing knowledge and professionalism of industry participants.** WQA will enhance and expand the opportunities by which the water treatment industry demonstrates value and positive impact on water quality.
> **GOAL 2: Increasing advocacy.** WQA will strengthen its position as a thought leader having a voice with government, NGO, and other industry associations at the United States federal, regional and state levels, and globally relative to all critical water quality concerns and solutions.
> **GOAL 3: Driving public awareness and knowledge.** WQA will proactively provide awareness and knowledge about the importance of understanding water quality by strategically communicating thought leadership, while highlighting the industry's ethics, technologies, methods and benefits.

Yes, we will have action plans, resources and budgets behind the strategic plan, but the true success comes from the strength of our members. If we are not promoting within the industry and presenting our pride of the association, industry and participants within it, the impact of the advocacy and public awareness aspects of the strategic plan are limited.

I can think of no better industry poised to have a major impact on public health and safety than the water treatment industry. We look forward to seeing more of our members and exhibitors who were unable to join us in Las Vegas. And, if you're a long-time member, please reach out and invite a colleague to explore what WQA has to offer. I look forward to seeing you in Orlando!

Pauli Undesser, MWS, Executive Director
Water Quality Association and
Water Quality Research Foundation

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North America

Cartridge system certified

Applied Process Equipment, Inc. announced that its Applied Cartridge Systems, a commercial water treatment product line, has been fully *NSF/ANSI/CAN 61*-certified for potable water. These systems are installed in water utilities, RV parks, hotels, casinos and resorts, military bases, aquaculture and food processing applications, manufacturing plants, subdivisions and multi-user wells of all sizes across North America. Each cartridge system comes complete with 304 stainless steel housings, prefilters and cartridges, all *NSF 61*-certified together as a package.

Centennial celebration for MWWA announced

The Minnesota Water Well Association (MWWA) will celebrate 100 years of service to the groundwater industry this year, a milestone that is rare in the water industry. The organization, which was formed in 1922, represents Minnesota's groundwater professionals including water well contractors, groundwater scientists, pump installers, and manufacturers of groundwater technology. The MWWA celebrated its anniversary as part of its annual trade show in late January. To further recognize MWWA's 100 years of service to the State of Minnesota, Governor Tim Walz declared January 31 as 'Minnesota Water Well Association Day' through a state proclamation.

Resin price increases announced

According to *PR Web*, Dupont announced an up-to-15-percent price increase for products/across/its ion exchange resin portfolio, effective February 1, as local regulations and contracts allow. Account managers will provide customers with specific details for the products purchased from DuPont Water Solutions. All new orders will be confirmed at the new price. In some cases, existing orders confirmed at previous pricing but invoicing on or after the effective date will be reconfirmed at the higher price if permitted under the specific legal framework in the country the sales transaction is conducted.

Should other DBPs be considered for regulation?

According to a paper in *Environmental Science & Technology*, researchers surveyed both conventional and advanced disinfection processes in the US, testing the quality of their drinking waters. Treatment plants with advanced removal technologies (such as activated carbon) formed fewer types and lower levels of DBPs in their water. Based on the prevalence and cytotoxicity of haloacetonitriles and iodoacetic acids within some of the treated waters, the researchers recommend that these two groups be considered when forming future water quality regulations.

Pentair residential water treatment offerings expanded

In a recent release from *Business Wire*, Pentair announced the introduction of a new, updated Pentair Water Solutions experience, exclusively on Pentair.com. These solutions are customized for each home and supported through proprietary, real-time local water data and commercial-grade water testing that demonstrates how water differs from home to home, block to block and city to city. This ensures every homeowner receives a personalized, results-driven solution for cleaner, better-tasting water. For more information on Pentair Water Solutions or to schedule a free water diagnosis, visit Pentair.com/home-water. Existing users of PelicanWater.com will be redirected automatically.

Research announced: kombaucha for membrane filtration

According to a recent paper published in the ACS journal *ES&T Water*, kombucha tea might also hold the key to affordable, environmentally sustainable living membranes for water filtration. Experiments by researchers at Montana Technological University and Arizona State University showed that membranes grown from kombucha (symbiotic culture of bacteria and yeast or SCOBY) cultures were better at preventing the formation of biofilms, a significant challenge in water filtration, than current commercial membranes. That team was able to engineer the cells in the yeast to produce glow-in-the-dark enzymes that could sense pollutants and then break them down after detection. One of their prototype materials senses the pollutant estradiol, while another could detect luciferase, a bioluminescent protein. Any number of other strains can be swapped out to achieve different functional properties.

New DBP standard proposed

ASTM International's water committee (D19) is developing a proposed standard that water quality laboratories will use to help ensure that environmental regulations for water are met. The proposed standard will provide an early warning prediction from raw source water of DBPs that are formed when natural organic matter in water reacts with disinfectants added to kill bacteria in water treatment plants. Drinking water treatment plant operators, managers and water quality laboratories will find the proposed standard useful, as it will help mitigate the risk of DBP compliance violations in a forward manner and help to minimize public exposure to contaminants. The proposed standard will help raise public awareness on DBP contamination issues and it will expand the service capabilities and/or reduce turnaround time for laboratory analysis.

Europe

Grundfos agreement announced

EKF (Denmark's Export Credit Agency) and Grundfos and have entered into an agreement, enabling the latter to finance projects globally for private commercial and public customers with limited funds available. The agreement is the first of its kind in the pump solutions industry and creates new opportunities for Grundfos to finance projects that will further access to water and optimized use of water resources. Moreover, it can help customers meeting their ambitions for reduced carbon emissions. Under the agreement, private commercial and public customers can receive financing on projects above 0.5 million EUR ($0.57 million USD) for up to five years directly through Grundfos. EKF will provide the company with a credit guarantee covering 50 percent of the credit exposure significantly reducing the risk in financing such projects. WCP

By Amanda Crangle

The Disappearing Line Between Marketing and Sales

In 2008, when I was setting and running sales appointments for the water treatment dealership I worked for, having the training and education on basic water chemistry and treatment gave me a massive advantage in our local market. We primarily dealt with problem water, so people knew they had an issue that needed to be fixed. They simply had to decide which local company would be the most trustworthy and have the best value, service and equipment. It was up to me to provide clarity on that choice.

How I long for the 'good old days.' Over the past 14 years, saying things have slightly shifted in consumer behavior would be like saying the microchip was a minor technological advancement. Recent studies show the way people interact with businesses is massively evolving to the point where the old tactics are becoming harder and harder to pigeonhole into our nice, neat box.

Yes, it's time to rip open the box, throw everything on the table and figure out how, in this digital-first age of consumer empowerment, we can best serve the needs of our market in a way that fits their lifestyle. First, let's discuss how this impacts your existing customer base. As business owners, we sure love the word loyalty. It's like your favorite oversized easy chair and a heavy blanket on a cold winter's night - snug as a bug in a rug. That is until you realize that the concept of loyalty has flipped upside down during your cozy evening nap and your customers now expect you to be loyal to THEM.

According to Qualtrics *Global Consumer Trends 2022 Report*, consumers are rapidly moving away from companies who provide poor experiences, as the cost of switching businesses freefalls towards zero. They also state that 9.5 percent of your topline revenue is at risk by not offering exceptional experiences to your customers.[1] It is increasingly clear that no longer are statements like, "We've been in business for 45 years" or "We have the best-performing softeners" going to cut it. People care less about your words and more about how they experience your company both on and offline.

How do we meet the ever-increasing demands of a market that has access to a nearly infinite amount of information at their fingertips? Ask, listen and respond—these steps apply to both existing and potential customers. While some old habits may die hard in this new battlefield of the over-stimulated mind, one age-old principle stands firm. Treat every interaction as if it may be your last. What impression do you want to leave? What questions should you ask? What questions of theirs should you answer? What call to action should you deliver?

The key to any successful relationship is effective and respectful two-way communication. The same study by Qualtrics states that 75 percent of consumers think companies need to be better at listening to feedback. If you don't know why most people leave your website without contacting you, use a poll or survey to ask them. We use HotJar.com, a free software for polls, surveys and visitor engagement analytics. Simply have your web team install the script on your site and follow the instructions to set up your first poll.

Ask questions like:

- "What is the primary reason for visiting our site today?" This is a simple, open-ended, qualitative question that will allow people to provide information about their needs in their own words.
- You can also ask a quantitative question like, "Which of the following issues are you experiencing?" with a checklist of common symptoms associated with water problems. This is an excellent question in soft water or low-knowledge-level markets.
- In hard water or mature markets, when people already know what type of equipment they need (or think they need), you could ask what kind of solution they're looking for with a pre-set checklist.

Asking quantitative and qualitative questions gives you a nice balance of data to holistically understand your customers. From there, review your site and see if it's quickly getting people the answers they need. If not, brainstorm with your team and marketing agency how to improve it, and then test to see if your ideas generate a higher percentage of leads.

You can also use tools like answerthepublic.com and see what types of questions people are searching for around a specific topic. You can then prioritize those questions by the volume of online searches for those terms using Google's free Keyword Planner for research. If your marketing company or staff has data on which keywords or searches are the most profitable, this is even more effective to overlay on top of the questions being searched online, as the highest volume search may not always be the most profitable.

By Amanda Crangle

Next on our list of mindset shifts is a transition of focusing your efforts primarily on sales to an integrated effort that combines both marketing and sales. Here are a few recent stats from *Forbes* that drive home the importance of this:[2]

- 70-90 *percent* of the buyer's journey is complete prior to engaging a vendor (Forrester).
- Consumers engage with 11.4 pieces of content prior to making a purchase (Forrester).
- Consumers are five times more dependent on content than they were five years ago. (Nielsen)

Where we, as business owners, once had the upper hand of knowledge to build value after someone contacted us, now the consumer feels they hold the power as they use the Internet and consumer reviews to make their decision. This begs the question, "How have you turned the front end of your marketing into an educational tool rich with reviews and testimonials to help inform your target audience and build rapport so that you stand out among your competitors?"

Furthermore, how are you using content to validate the consumer's decision as they go through their journey to do business with you? Understand that the trust they feel will not immediately be in your brand (that will come with the repeated experience of you delivering on your promises). The initial trust will be in the information you provide. Quality is key.

Going back to the steps of ask, listen and respond, we can use our knowledge to build online content (ads, videos, articles, blogs, landing pages and social posts) around our product or service's most frequent questions, objections and misconceptions. By doing this, we're preemptively communicating, educating, validating and building trust long before the physical or verbal interaction.

Finally, let's discuss leverage. If you're like me, you hate having to do the same thing over and over again. In my business, our team is constantly looking at ways to better automate, create improved processes and leverage our time and resources to the best of our ability to maximize our effectiveness. The idea of creating endless content seems overwhelming and counterproductive.

Many companies spend a fortune on blogs and content creation. They keep spinning their wheels with little results using what I call the spaghetti method: throw everything against a wall and see what sticks. While this might be adorable for an 18-month-old toddler, it's quite concerning as a marketing strategy executed by full-grown adults. Understanding the concept of leverage will help avoid a saucy mess.

Imagine taking a few hours of an afternoon and creating a full-length video of the most common questions and objections your team responds to during their everyday work. You've prioritized the topics in order of importance to your target market and you've scripted out what to say. After a few hours of rehearsing and filming, you'll have a rough edit of what will turn into multiple videos. Then, you can leverage these videos on social media, pre-appointment emails or texts, pre-service call emails or texts, post-appointment follow-ups, website content, blog content and more.

Do this once per quarter. Your marketing team will have so much to work with, they'll be busy helping you build credibility while improving your online rankings. It just takes a little planning, a good cell phone camera and a team member who doesn't mind being on video. If no one on your team fits that description, it's up to you. The rewards will be worth it! This strategy works whether you serve consumers or other businesses.

According to a *Harvard Business Review* article, the single biggest driver of a consumer's likeliness to follow through on an intended purchase is the ease of gathering trustworthy information about a product and confidently and efficiently weighing their purchase options.[3] If they go through this process without you guiding them, what are the chances they'll choose you over a less expensive or simpler option? While your sales team still plays a vital role in helping acquire more customers, it's more important than ever to integrate your team's knowledge in your early marketing strategy to address your target market's questions as well as reveal the value previously saved for a sales presentation upfront in your communication.

Conclusion

As the line between marketing and sales continues to blur, make time now to ensure that your digital presence is leading your ideal prospect down an educational, logical, simple path to do business with you. For help with strategy and execution, our team is available to help you plan for 2022 and beyond.

References

1. Qualtrics XM Institute. *Global Consumer Trends in 2022*. https://www.qualtrics.com/blog/global-consumer-trends-2022/
2. *Forbes*. "The Role of Influence In The New Buyer's Journey." https://www.forbes.com/sites/danielnewman/2014/04/10/the-role-of-influence-in-the-new-buyers-journey/
3. *Harvard Business Review*. "To Keep Your Customers Keep It Simple." https://hbr.org/2012/05/to-keep-your-customers-keep-it-simple

About the author

Amanda Crangle and the team at Lamplight Digital Media help residential and commercial water treatment companies profitably grow their dealerships using digital marketing. They have worked with over 100 water treatment dealerships spanning North America, managed millions of dollars in ad spend and performed over 1,000 scientific website split tests. Crangle intimately knows the water industry, having worked in a dealership as a sales rep and as a general manager. She and her team are passionate about expanding consumer awareness of water quality issues and providing education on final barrier solutions. WCP

Seventh EWT Symposium keynoters announced

Dr. Richard Thorsten, Chief Impact Officer for Water.org and **Robert Puente**, President and CEO of the San Antonio Water System, will deliver the keynote addresses at the seventh Emerging Water Technology Symposium (EWTS), scheduled for May 10-11 in San Antonio, TX. Thorsten oversees collaboration and innovation across the Global Impact department to generate a credible evidence base to advance insights, influence action and contribute to thought leadership. Puente was appointed San Antonio Water System's president and CEO in May 2008. As Chief Executive of one of the nation's largest utilities, he provides leadership in delivering water and wastewater services to more than 1.7 million consumers, developing new water resources, continuing infrastructure upgrades throughout the community, and building regional partnerships.

Calkins certification announced

NGWA VP of Finance **Becca Calkins**, CPA, recently earned the Certified Association Executive (CAE) designation from the American Society of Association Executives. ASAE states the CAE designation is the marker of a committed association professional who has demonstrated the wide range of knowledge essential to manage an association in today's challenging environment. Calkins joined NGWA in December 2019. Prior, she was the CFO of the Ohio Insurance Agents Association for nearly 10 years. She earned her CPA in 2011. Calkins' recently earned designation gives NGWA three CAEs on its staff. NGWA CEO Terry S. Morse earned the designation in 2019 and David Evener, NGWA's VP of Operations, earned it in 2014.

Hansen Elected to AWE Board of Directors

Dain Hansen, IAPMO's Executive VP of Government Relations, has been elected to the Alliance for Water Efficiency's (AWE) Board of Directors. He will serve a three-year term with North America's leading non-profit dedicated to the efficient and sustainable use of water. A four-time winner of the US EPA's Water Excellence Award for Strategic Collaboration (2012, 2017-19), AWE's network of members includes more than 500 stakeholders representing manufacturers, water and wastewater utilities, government agencies, water conservation professionals, planners and consumers working together to ensure communities, businesses and ecosystems have the water they need to thrive.

Watson named IAPMO VP

IAPMO announced that **John Watson** has joined the organization as VP of Industry Relations and Business Development. He has more than 30 years of plumbing industry experience in product development and compliance management. Prior to joining IAPMO, Watson was the Senior Manager of Compliance & Sustainability for Elkay Manufacturing. Before that he was the Director of Water Efficiency & Technical Services for Sloan Valve. Watson also held several positions at Chicago Faucet, where he started in engineering and completed his tenure in operations. He earned a Bachelor of Science Degree in business administration and management from Elmhurst University and an Associate of Applied Science degree in engineering design/drafting from Triton College. Watson is involved in multiple professional volunteer associations, serving on the *ASME A112* Main Committee, the ASME/CSA Joint Harmonization Task Group (JHTG) for plumbing products and several ASME working groups. He is a member at large of the KCMA *A161.1* Standards Committee, a past board member of Plumbing Manufacturers International (PMI) and also served on several Water Quality Association (WQA) committees when he was active in the WQA.

Two earn NGWA certification

NGWA announced that Kevin Uffmann and Mike Pedersen have successfully completed NGWA's certification examination and met the other requirements leading to the status of Certified Well Driller (CWD). Since February 1988, Uffmann has been a field supervisor for Layne Christensen, a Granite Company. Pedersen is Senior Driller for Inberg-Miller Engineers.

Zurbuchen to be ACE22 Keynote speaker

The American Water Works Association announced that **Dr. Thomas Zurbuchen**, NASA's Associate Administrator of Science, will be the Opening General Session Keynote speaker at ACE22 in June. Dr. Zurbuchen is responsible for NASA's Science program, helping to answer some of humanity's biggest questions. He will share his perspectives on water as a vital resource - whether on this planet or elsewhere. WCP

Upcoming Events

Highlighted listings denote *WC&P* attendance or distribution (subject to change)

March 2022

1-4 **Introduction to Spunbond and Meltblown Technology**
Raleigh, NC, USA
https://www.inda.org/training/advanced-training.php

6-9 **37th Annual WateReuse Symposium**
San Antonio, TX, USA
https://watereuse.org/news-events/conferences/37th-annual-watereuse-symposium/

6-12 **Groundwater Awareness Week**
https://www.ngwa.org/getinvolved/groundwater-awareness-week/groundwater-awareness-week-2022

8-10 **FILTECH 2022**
Cologne, Germany
https://filtech.de/

10 **Eastern WQA Spring Training**
Marlborough, MA, USA
https://ewqa.org/product/ewqa-spring-training-event-ma-registration/#attendees

11 **World Plumbing Day**
https://www.worldplumbing.org/worldplumbingday/

22 **CIPH Gala In Support Of Habitat For Humanity**
Toronto, ON, Canada
https://www.ciph.com/events/EventDetails.aspx?id=1569464&group=

22 **World Water Day**
https://www.worldwaterday.org/

29-31 **FiltXPO® International Filtration/Separation Exhibition & Technical Conference**
Miami Beach, FL, USA
https://www.filtxpo.com/

April 2022

6-8 **WQA Annual Convention & Exposition**
Orlando, FL, USA
www.wqa.org/convention

11-14 **National Water Safety Conference**
Fort Worth, TX, USA
https://watersafetyconference.com/

17-21 **Singapore International Water Week 2022 Virtual**
www.siww.com.sg/

22 **The Water Tower Campus Grand Opening and Demo Day**
Buford, GA, USA
https://www.theh2otower.org/demo-day/

25 **The Water Tower Water Innovation & Leadership Summit**
Buford, GA, USA
https://members.theh2otower.org/calendar/Details/water-innovation-leadership-summit-359750?sourceTypeId=Website

May 2022

10-11 **Emerging Water Technology Symposium**
San Antonio, TX, USA
https://ewts.org/

16-18 **Global Water Summit**
Madrid, Spain
www.watermeetsmoney.com/

19 **Eastern WQA Spring Training**
Hagerstown, MD, USA
https://ewqa.org/

23-24 **Smart Water Utilities USA 2022**
Huntington Beach, CA, USA
www.usa.smart-water-utilities.com

29-Jun 2 **IDA 2022 World Congress**
Sydney, Australia
https://wc.idadesal.org/

30-Jun 1 **International Specialty Conference on Innovation in Desalination**
Jeddah, Saudi Arabia
https://idadesal.org/list-events/about-ida-swcc-dtri-innovation-in-desalination-conference/

30-Jun 3 **IFAT Munich**
Munich, Germany
https://ifat.de/en/

June 2022

8-10 **Aquatech China**
Shanghai, PR China
https://www.aquatechtrade.com/china/

12-15 **AWWA Annual Convention & Exposition (ACE22)**
San Antonio, TX, USA
https://www.awwa.org

15-17 **Florida WQA Annual Convention**
Daytona, FL, USA
https://fwqa.com/

21-22 **Fate of PFAS: From Groundwater to Tap Water**
Westerville, OH, USA
https://www.ngwa.org/detail/event/2022/06/21/default-calendar/22jun5010

July 2022

12-14 **AMTA/SEDA Workshop: PFAS and Emerging Contaminant Rejection by Membranes**
Durham, NC, USA
https://www.amtaorg.com/event/amta-technology-transfer-workshop-durham-nc-april-27-29-2021

25-28 **49th Annual TWQA Convention & Exposition**
Frisco, TX, USA
https://twqa.org/events.php

August 2022

23-25 **THE WATER EXPO 2022 11th Edition**
Miami, FL, USA
https://www.thewaterexpo.com/

September 2022

6-8 **Aquatech Mexico**
Mexico City, Mexico
https://www.aquatechtrade.com/mexico/

11-15 **IAPMO 93rd Annual Education and Business Conference**
Charlotte, NC, USA
https://www.iapmo.org/ibu/events

11-22 **IWA World Water Congress & Exhibition**
POSTPONED FROM 2021
Copenhagen, Denmark
https://worldwatercongress.org/

12-16 **drinktec 2022**
Munich, Germany
https://www.drinktec.com/index.html

13-15 **WQA Mid-year Leadership Conference-trade-show**
Olympic Valley (Lake Tahoe), CA, USA
https://mylc.wqa.org/

14-16 **ASEAN Sustainable Energy Week 2022 (ASEW)**
Bangkok, Thailand
https://www.asewexpo.com/2021/en/index.asp

21-23 **Eastern WQA Fall Trade Show and Conference**
Wilkes-Barre, PA, USA
www.ewqa.org

27-28 **Canadian Hydronics Conference**
Saskatoon, Saskatchewan
https://www.ciph.com/page/CHC2021

October 2022

5-7 **INDOWATER 2022: 16th International Water, Wastewater & Recycling Technology Expo & Forum**
Jakarta, Indonesia
https://indowater.merebo.com/

10-13 **PWQA 65th Annual Trade Show & Convention**
Location TBD
https://pwqa.com/

15 **Global Handwashing Day**
https://globalhandwashing.org/global-handwashing-day/

18-20 **Aqua Ukraine 2022**
Kiev, Ukraine
https://www.iec-expo.com.ua/en/aquaen-2022.html

November 2022

19 **UN World Toilet Day**
https://www.un.org/en/observances/toilet-day

December 2022

6-8 **2022 Groundwater Week**
Las Vegas, NV, USA
https://groundwaterweek.com/

7-8 **Virtual Groundwater Summit**
https://pheedloop.com/Summit2021/site/home/

March 2023

11 **World Plumbing Day**
https://www.worldplumbing.org/worldplumbingday/

22 **World Water Day**
https://www.worldwaterday.org/
WCP

By Water Quality Association

2022 WQA Convention and Exposition Schedule of Events

(all dates/times are subject to change)

Tuesday, April 5, 2022

8:00 AM - 4:30 PM **WQA Business Boot Camp**

1:00 PM - 5:00 PM **Commercial/Industrial RO Sizing Workshop**

Wednesday, April 6, 2022

7:30 AM - 5:00 PM Registration Open

8:00 AM - 8:50 AM ***Field Ethics - Who is Watching?***
Moderator: Candice M. Wentling, MWS, Certified Action
Panelists: Michael Sennett, WQA; Joseph Huemann, CWS, CI, Huemann Water Conditioning and Lupe Ledezma, Culligan Southwest

9:00 AM - 9:25 AM ***Legionella Reduction Using Treatment Devices***
Presenter: Thomas P. Palkon, MWS, IAPMO

9:00 AM - 9:50 AM ***Alternative Water Sources - What Are the Opportunities?***
Presenter: Peter S. Cartwright, MWS, PE, Cartwright Consulting Company

9:00 AM - 9:50 AM Federal Government Affairs Committee

9:00 AM - 9:50 AM ***Getting the Lead Out***
Presenter: Peter Meyers, PhD - ResinTech Inc

9:30 AM - 9:55 AM ***Combating Legionella Amidst the Virus Pandemic***
Presenter: Yuly Vesga, PhD, Argonide Corporation

Wednesday, April 6, 2022 (continued)

10:00 AM - 10:25 AM ***Disinfection Performance Against Legionella pneumophilia, Pseudomonas aeruginosa and Escherichia coli Using Flow-Through UVC Led Reactors***
Presenter: Sanjay Kamtekar, PhD

10:00 AM - 10:25 AM ***Commercial Water Reclamation Systems and Applications***
Presenter: Brian Soderholm

10:00 AM - 10:50 AM ***Don't Let Inflation Hurt Your Profitability***
Presenters: Jason Chapman and Chris Wilker, Canature WaterGroup USA, Inc.

10:00 AM - 10:50 AM ***Practical Advice for Successful Application of Arsenic Media***
Presenters: Randy Eddinger, MWS, Suburban Water Tech/Suburban EcoWater and Michael Urbans, MWS, Urbans Aqua

10:00 AM - 10:50 AM Water Sciences Committee

10:30 AM - 10:55 AM ***Water for Reuse in Buildings - Examples from the US State Department***
Presenter: Oludamilola Martins, Civil Engineer, US Department of State

10:30 AM - 11:20 AM ***How to Respond After a Boil Water Advisory***
Presenter: Jennifer Smith, CWS, Moti-Vitality

Wednesday, April 6, 2022 (continued)

11:00 AM - 11:50 AM ***Collaborative Pilot-Scale Evaluation of GAC and IX Medias for Removal of PFAS from Groundwater***
Presenter: Adam Redding, PhD

11:00 AM - 11:50 AM Dealer Section
(Open Forum)

11:00 AM - 11:50 AM Product Certification Forum
(By Invitation)

11:30 AM - 11:55 AM ***Brine Reclaim***
Presenter: Vincent M. Kent, CWS, CI, Abendroth Water Conditioning, Inc.

12:00 PM - 1:50 PM Board of Directors Meeting
(By Invitation)

1:00 PM - 1:25 PM ***Comparing the Triple Bottom Line of Centralized Water System Improvements to Point-of-use or Point-of-entry (POU/POE) Water Treatment Systems for Very Small Communities in the US***
Presenter: Kaycie Lane, PhD, University of Massachusetts Amherst

1:00 PM - 1:50 PM ***Fundamentals of Long-Life Resin Applications***
Presenter: Frank DeSilva, ResinTech, Inc.

1:00 PM - 1:50 PM ***Management Essentials***
Presenter: Candice M. Wentling, MWS, Certified Action

1:00 PM - 1:50 PM State & Regional Government Affairs Committee

1:30 PM - 1:55 PM ***Emerging Contaminant Removal and Microbial Growth in Membrane Filtration and Activated Carbon Point-of-use (POU) Systems***
Presenter: George Zhou, PhD, Purdue University

2:00 PM - 2:50 PM ***Dialysis Treatment System Design***
Presenter: Larry Zinser, Col, USMC (ret); BS Chem, Master Water Conditioning Corp.

2:00 PM - 2:50 PM Manufacturer/ Supplier Section
(Open Forum)

2:00 PM - 2:50 PM ***Permitting Problems Round-table***
Moderator: William S. Siegmund, MWS, Pure Water Works, Inc.

3:00 PM - 4:30 PM Opening General Session

5:00 PM - 6:00 PM Premier Member Meeting
(By Invitation)

Thursday, April 7, 2022

7:30 AM - 5:00 PM Registration Open

8:00 AM - 8:50 AM ***Marketing Talent (RISE, THRIVE, WIN)***
Moderator: Jennifer Smith, CWS, Moti-Vitality
Panelists: R.J. Easton, The US Water Culligan Group and Rachel Cook, EcoWater Systems LLC

9:00 AM - 9:50 AM Commercial/ Industrial Section
Presenter: Greg Reyneke, MWS, Red Fox Advisors

9:00 AM - 9:50 AM Industry Research Committee

9:00 AM - 10:20 AM ***The Value of Product Certification***
Presenter: Kelli Fleischmann and Kristin Licko, WQA

9:30 AM - 10:20 AM ***Owner Resources***
Presenter: Ed Ramos, BS, MPA, US Small Business Administration

10:00 AM - 10:50 AM Communications Committee

10:00 AM - 10:50 AM International Section
(Open Forum)

10:30 AM - 10:55 AM ***Sustainability Advantage of Treating PFAS at POU/POE vs. Centralized Treatment in Small Systems***
Speaker: Taler Bixler, PhD Candidate, University of New Hampshire

11:00 AM - 5:00 PM Show Floor Open

12:00 PM - 1:20 PM WQRF Members & Directors
(By Invitation)

5:30 PM - 7:00 PM (Rosen Centre Pool Deck)
Welcome Reception

Friday, April 8, 2022

7:30 AM - 12:00 PM Registration Open

8:00 AM - 8:50 AM ***Adapting and Thriving In the New Digital-First World of Marketing, Lead Generation, and Sales***
Presenter: Amanda Crangle, Lamplight Digital Media

8:00 AM - 8:50 AM ***Ion Exchange Kinetics***
Presenter: Charles F. Michaud, MWS, Systematix Co.

8:00 AM - 8:50 AM WQRF Research Advisory Committee
(By Invitation)

8:30 AM - 8:55 AM ***Lead & Copper Rule Update***
Presenter: Rory Billing, 120Water

9:00 AM - 2:00 PM Show Floor Open

11:00 AM - 12:20 PM WQRF Contributor Luncheon
(By Invitation). WCP

Brine Reuse with the Elution Curve

By Lawrence R. 'Larry' Zinser

The regeneration of cation exchange resin in water softeners is an extremely inefficient process. The purpose of this article is to describe the efficacy of brine reuse as a method to improve efficiency and the use of an elution curve to illustrate the process.

The only reason why the water softening process works is that the ion exchange sites on the cation resin have a relatively high affinity for the hardness ions in water. Since we start with cation resin with a less desirable ion (sodium) at those sites, the water softener resin will exchange the sodium ions for the hardness ions in the ion exchange process. But after the resin is saturated with the hardness ions, those ions must be replaced with the original sodium ions. The most common source for the sodium is from a concentrated solution of sodium chloride, called brine. This brining process is the source of the inefficiency in water softeners.

During the brine and rinse cycle of regeneration, the ion exchange resin is flooded with sodium ions. Flooded because otherwise, the ion exchange sites on the resin would not release the hardness ions for sodium. But since only the hardness sites on the resin exchange for sodium, the remaining sodium ions and all of the chloride ions are discharged as waste. This high-salt waste affects the municipal treatment plants or the soil surrounding septic systems, depending upon the sanitary sewer situation.

Consequently, the discharge of brine has been a target of both municipal and environmental concern. Around the beginning of this century, the water softening technology also improved dramatically with the use of digital electronic timers and advances in injector technology. Today the brine and rinse cycle can be closely controlled. The efficiency of brining is a function of the salt dosage that is applied during the regeneration process. Figure 1[1] provides a description of the relationship between brine dosage, in pounds of salt per cubic foot of softening resin and the resulting softening capacity achieved by the regeneration.

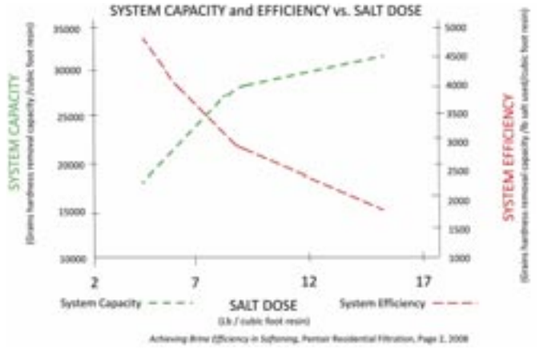


Figure 1. System capacity and efficiency versus salt dose.[1]

Prior to 2000, the standard salt dosage was 15 pounds (6.80 kilograms) of salt per cubic foot of resin, which is relatively inefficient. The new technology allowed the selection of specific salt dosages. This potential for improvement efficiency prompted the National Sanitation Foundation to develop *NSF 44* as a rating system for water softeners around 1996, aimed at rating softeners based upon how much salt is sent to drain for every grain of hardness that has been removed during regeneration.

Today's efficiency standard is 4,000 grains of capacity achieved for every pound of salt sent to drain and the typical efficient salt dosage is about seven pounds (3.17 kilograms) of salt. The brine

By Lawrence R. 'Larry' Zinser

and rinse cycle is the key part of regeneration during which the excessive salt is released to drain. In an effort to increase the salt discharge efficiency, a number of original equipment manufacturers (OEMs) have ventured into the science of brine reuse, essentially returning a selected portion of the discharge during the brine and rinse cycle back to the brine tank so that the brine can be reused on subsequent regenerations. In order to determine what portion of the brine and rinse discharge to select, an elution curve was created for the cycle.

The elution curve is a track of the salt concentration of the cycle effluent over time. The elution curve is created by tapping into the water softener drain at regular intervals during the brine and rinse cycle, and measuring the salt concentration with a salt hydrometer. The time of each tapped sample is recorded by a stopwatch. Drain water samples are collected about every two minutes during the brine and rinse cycle, and then plotted as a graph.

Figure 2 shows a normal elution curve. At the beginning of the cycle, there is a delay in the appearance of salt to drain because the brine mixture created by the injector must flow down through the resin bed and up the riser to the drain port. Once the brine reaches the drain, its concentration will be about 8-10 percent, since it was diluted by about half at the injector. The rise in salt concentration should be very sharp. This concentration should remain fairly constant through the entire brine and rinse cycle until all of the salt has been rinsed from the resin bed. As long as the rinse cycle is long enough, the concentration will return to the starting level by the end of the cycle.

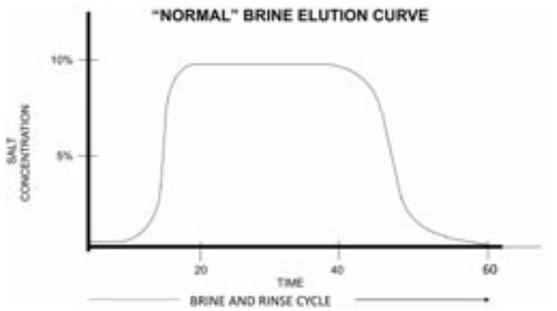


Figure 2. Normal brine elution curve.

An analysis of this data alone can be instructive regarding the effectiveness of the brine and rinse cycle. For example, if the salt level rises too early on the curve, this could be an indication of channeling along the riser or an insufficient backwash. If the curve is too low, this indicates an insufficient brine draw. Brine reuse consists in the use of a two-way valve on the drain port of the softener valve. For brine reuse, a specific time window is selected from the elution curve. During that preset timed period, the two-way valve redirects the drain flow back into the brine tank. The brine flow during this period is the reused brine. This reused brine is returned to the brine tank where it dissolves more salt until it becomes saturated and ready for the next regeneration cycle.

If we intend to reuse brine however, there are other important factors to consider. First, this cycle has two steps: brine draw and slow rinse, as seen on Figure 3. During brine draw, the rate of flow to drain will be about twice that of the rinse-only phase. This is because the ball check valve in the brine tank activates after the predetermined brine dosage (volume) has been reached. Second, if we are to redirect the drain effluent back to the brine tank, this cannot be done until *after* the ball check. Otherwise the brine will continue to recycle between the brine tank and the resin bed. This limits the potential period when we can redirect the drain back to the brine tank and also the volume of reused brine because the drain flow rate is lower during slow rinse.

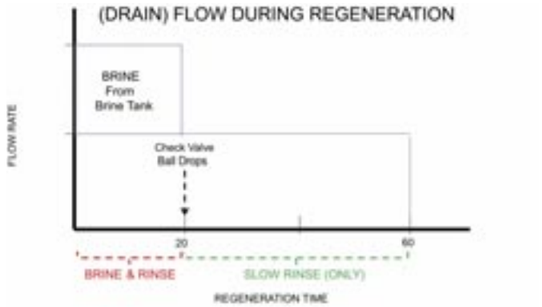


Figure 3. (Drain) flow during regeneration.

As would be expected, some of the drain flow during the brine and rinse cycle will contain the hardness which is being exchanged for sodium on the resin. To further refine the elution curve, the hardness level at each sample can be determined and plotted on the elution curve. Although there will be some variation based upon the fresh water analysis, the typical hardness content is relatively low (less than 0.1 percent of the sodium) during the rinse-only step. These two factors may be added to the elution curve as in Figure 4.

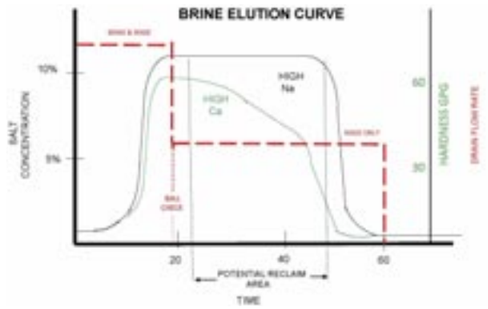


Figure 4. Brine elution curve.

Last, and most important, there is a lower limit to the salt dosage which can be used for brine reuse. This is because at higher salt efficiencies, say seven pounds per cubic foot, there will not be enough salt available in the drain flow to send back to the brine tank. Consequently, higher salt dosages are used, typically in the range of 10 to 15 pounds (4.53 to 6.80 kilograms) per cubic foot.

Conclusion

During testing that I have conducted over a year's period of time, the best result I achieved was reusing 20-23 percent of the total salt to drain. Some OEMs have claimed higher percentages,

By Lawrence R. 'Larry' Zinser

ranging up to 35 percent, on commercial water softeners. But even if 35 percent is achievable, if the starting point regeneration dosage is at 17 pounds (7.71 kilograms) per cubic foot (2,500 grains capacity on Figure 1), then the salt-use efficiency would only be increased by another 500 or 600 grains. This is well below the efficiency achieved by starting with the lower salt dosage. Salt reuse strategy cannot compete in salt efficiency with currently available injector and electronic technology for most water treatment applications. The only potential exceptions may be those applications where a high salt dosage is required, such as high iron content.

Rather than redirecting the post ball check brine flow back into the system brine tank, what if all of the high-salt drain flow across the elution curve is directed to a separate container and then that solution is processed with membrane technology to re-concentrate the brine for the next regeneration? This is the intent of current efforts by the American Society of Sanitation Engineers to develop a new standard, *ASSE-1088*, which will focus upon performance standards for brine reuse.

Reference

1. "Achieving Brine Efficiency in Softening." *Pentair Residential Filtration*. Page 2, 2008.

About the author

Following an education in chemistry (BS Degree) at Georgetown University, graduate work at Wayne State University and a 27-year career with the US Marine Corps, Lawrence R. 'Larry' Zinser has served an additional 27 years in design, manufacture, education and troubleshooting of residential, commercial and industrial water treatment systems. He has provided numerous technical courses throughout the country and internationally, which have been accredited by the Water Quality Association, the Pennsylvania, North Carolina, Maryland, Virginia, and Delaware Ground Water Associations, the American Nephrology Nurses Association and the Lehigh-Carbon County Community College. Zinser can be reached at larry@masterwater.com or cell phone, (215) 421-7115.

About the company

Master Water Conditioning, founded in 1967, is based in Pottstown, PA. It offers residential, commercial and light industrial products and systems to address a wide range of water issues. The company's products include POE water softeners, filters and ultrafiltration systems, which are sold under the Alliance, Clarifier, MasterFusion, Satin, PuroPro, UltraPro and Clear Reflections brands, among others. The company's team of professionals work hard for the industry and are proud to be a respected market leader for innovative, high-quality products and market knowledge. Master Water Conditioning proudly joined the A. O. Smith family in 2021 as part of A. O. Smith North American Water Treatment.

WCP

By Gary Battenberg

Water Filtration Methods and Processes – Counting the Ways, Part 3

In Part 2 of this series, we looked at the finer points of filtration regarding clarification and remediation of sediment, odor and color removal from water to improve the aesthetics and potability. Additionally, the importance of obtaining the hydraulic characteristics of the well pump flowrate at 30 and 40 psi for the purpose of proper sizing of automatic backwash filters that do not exceed the available pump output was also discussed.

Now we are going to consider the diverse types of filtration media commonly used in our industry today, with close attention to hydraulic and temperature requirements to ensure consistent and reliable filtration performance. We left off with tannin removal from water and we will start there with the available treatment options.

As previously mentioned, tannin is the proverbial fly-in-the-ointment when it is present in a water supply and should be removed early in the treatment process. Methods used for many years with good success include oxidizing processes (such as super chlorination or hydrogen peroxide injection) dating back to the mid-1950s and are still among the most effective options to date, especially if the water is complexed with iron, manganese and/or hydrogen sulfide.

The disadvantage with this treatment configuration is the total footprint requirement, which includes the dosing pump and solution tank, contact tank and backwashing carbon filter and softener. In recent years, the hyper-contacting tank has replaced the traditional 80- or 120-gallon (302 or 454- liter) contact tanks with a much smaller tank volume of 25 gallons (95 liters), making the footprint much smaller. The hyper-contact tank utilizes an internal manifold that incorporates a mixing device similar to a static mixer (that increases the rate of mass transfer of gases and chemicals into the water quickly and efficiently) versus injection of a chemical or gas into the water stream and then expose that stream into a large body of water, where slow movement creates the contact time.

In Part 2 of this series, incorrect graphics were added that did not relate to the text. We regret the error.

Tannin color bodies are high-molecular-weight, microscopic, colloidal particulates. Recent tannin treatment options include membrane hyperfiltration such as reverse osmosis, nanofiltration or ultrafiltration. Because tannins exhibit high molecular weight, membrane separation is highly effective for tannin removal. More recently, electropositive filtration has demonstrated a high affinity for tannin removal from water with good success. (Tannins are colloidal and the electro-adhesion capability of the media works like a particle magnet. This will be discussed further in Part 4.) The advantage over membrane type treatment is there is no waste-water stream to contend with because the electropositive media functions as a dead-end or final barrier filter.

Filter media selection

There are multiple choices and methods available for primary filtration whether it is for sediment capture, or more complex problems such as bacteria and algae remediation. We will consider the most common media including, dissimilar metals, garnet, gravel, sand, calcite and corosex, manganese greensand, manganese-reactive media, birm, Filter-Ag and granular activated carbon. The importance of hydraulics in water filtration is not to be underestimated or taken lightly. The recommended media service flowrates and hydraulic lift requirements for backwash must stay within the hydraulic constraints of the well pump output for consistent, dependable and long-term performance and most importantly, customer satisfaction.

Dissimilar metals

The most common of this type of media is KDF 55, KDF 85 and KDF fines. These media catalyze oxidation-reduction reactions, which means the media require an electrical potential to transfer electrons from one compound or element (the oxidant) to another compound or element (the reductant). The electrical potential is created by the TDS (conductivity) in the water. The media requires a minimum of 200 mg/L TDS to create the oxidation reduction potential (ORP). KDF 55 is typically used to treat for free chlorine and heavy metals removal.

KDF 85 is typically used to treat iron, manganese and hydrogen sulfide. This medium can operate at up to 15 gm/ft^2 with sufficient TDS. KDF 85 is, however, the heaviest of all and has a high apparent density (weight) of 171 lbs/ft^3 and requires 30 gpm sq/ft^2 for backwash to ensure required lift. KDF fines are typically used in carbon blocks and the media has been introduced in block form as well for filter systems. **CAUTION:** This media is not recommended for use where high turbidity and/or phosphate are present. High turbidity and phosphates will accumulate and build up on the media, which causes surface blinding and reduces the ORP or insulates the media from the water. Phosphates also will cause the media to solidify into a solid mass, which results in high pressure drop.

Garnet

Garnet is the second heaviest medium in our list with an average weight of 144 lbs/ft^3 and is typically used as an underbed, where media apparent density is 100 lbs/ft^3 or more. Garnet is available in typical mesh sizes of #8, #8-12, #30-40 and #60 mesh. The larger #8 mesh size is typically used as underbed for multi-media, sand and other high apparent density media filters. The smaller #30-40 is usually the second layer in a multimedia filter followed by sand and anthracite. The smallest #60 mesh garnet is used as a polishing medium, which yields particle reduction down to 2-5 microns in professionally designed systems.

Gravel

Gravel is available in multiple effective sizes including 0.5-inch X 0.25-inch, 0.25-inch X 0.125-inch and #20 flint, and has apparent density of 100 lbs/ft^3. For residential filters, 0.25-inch X 0.125-inch is the recommended underbed for softening and lighter filtration media with apparent densities less than 100 lbs/ft^3. A 3-5-inch depth is typically required to ensure complete coverage of the lower collector to eliminate the potential for a transverse distributor effect. This condition is created when the lower collector is partially exposed on one side and is usually caused by laying systems fully horizontal during transport which allows the media to shift. When the filter of softener is stood upright, the gravel may not return to a previously level condition. Therefore, uneven flow through the resin or filter media will cause accelerated service flow to the exposed collector and uneven backwash, resulting in mediocre quality effluent.

Sand

Sand is one of the oldest filtration media and like gravel, has an apparent density of 100 lbs/ft^3. For mono bed sand filters, #8-12 garnet is recommended as an underbed to prevent fluidization of the sand. Keep in mind that the underbed must always be heavier when the filter media is 100 pounds or more. Sand filters typically yield clarity to the 10-micron level @ 5 gpm/ft^2 service flowrate. A healthy human eye can see 40 microns. Backwash flowrates are between 10-15 gpm/ft^2, depending on water temperature and require a minimum 35-percent bed expansion. For example, water that is 10°F colder will provide approximately 40-percent bed expansion versus 35-percent bed expansion during backwash. Conversely, water that is 10°F warmer will decrease lift from 35 percent to approximately 21 percent. **NOTE:** For water treatment where potability is a requirement, make sure garnet, gravel, sand and anthracite coal meet *AWWA B100* purity standards for arsenic leaching.

Calcite and corosex

These two media are sacrificial and elute (dissolve) into acidic water to elevate low pH conditions. Calcite is a hard calcium carbonate ($CaCO_3$) that dissolves slowly to elevate low pH (5-6) to neutral, which reduces the potential for corrosion and the leaching of copper, lead and other metallic piping and fixture metals of service plumbing systems. Corosex is granular magnesium oxide (MgO) and is used to elevate extremely low pH (4-6) waters and elutes at a higher rate than calcite. It is not recommended to use this medium where pH values are less than 4.0 because solidification may render it inoperable. Corosex is commonly mixed with calcite to prevent over correction of pH.

Service flowrates for these media range between 3-6 gpm/ft^2, while backwash flowrates are 8-12 gpm, depending on water temperature and require a minimum bed expansion of 35 percent. **NOTE:** These media require periodic replenishment due to their sacrificial characteristics. Additional hardness will be added to the effluent and should be combined with the raw water hardness to calculate the total compensated hardness where a water softener is specified.

Manganese greensand and manganese reactive media

Manganese greensand has been used in water treatment since 1925 for the removal of iron, manganese, hydrogen sulfide, arsenic and radium. It is regenerated with potassium permanganate ($KMnO_4$) at 0.25 lbs (4 ounces) /ft^3 periodically. More recently, the original manganese greensand was improved upon with the development of Manganese Greensand Plus™. Both media had/have an apparent density of 85 lbs/ft^3. The original manganese greensand, now obsolete, had a temperature limitation of 85°F because of the glauconite core substrate, whereas the newer product has a silica sand core substrate and no temperature limit. Service flowrates range between 2-12 gpm/ft^2 and the backwash rate requirement is 12 gpm/ft^2 at 55°F, with a bed expansion of 35-50 percent. Pay close attention to the pH limits for this media The pH should be no lower than 6.2 nor greater than 8.5.

Technical Tip: Field tests for a standalone manganese greensand iron filter without a softener have shown that a 75-percent bed expansion (where a 75-percent freeboard in the media tank is available) virtually eliminates the ferric and manganese oxide residues, which react with chlorine and may produce a tea-colored tint to the water. (In this application, the media tanks were 10-inch diameter X 60 inches tall with 1 cu/ft^3 of media, which provided a 35-inch freeboard area and easily allowed for the 75-percent bed expansion without losing media to drain while backwashing

By Gary Battenberg

at 14gpm. Additionally, the filters were regenerated counter currently to prevent dilution of the potassium permanganate.) This was proven for a swimming pool application where the water was treated with manganese greensand and chlorine-dosed effluent water and no discoloration resulted.

Manganese-reactive media function well for oxidation of iron, manganese and hydrogen sulfide and can either be regenerated with potassium permanganate, chlorine, ozone, or air injection to aid oxidation. They can function as catalytic media requiring only periodic backwash. These media range in apparent density of 120-125 lbs/ft^3. Service flowrates are recommended at 5 gpm/ft^2 and backwash rates of 22-30 gpm/ft^2 with bed expansion of 15-30 percent depending on water temperature. The pH values should be between 6.5- 9.

Birm

Birm is a lightweight media with an apparent density of 46-50 lbs/ft^3. It is primarily used for iron and manganese reduction and requires no regeneration chemicals. The water to be treated, however, must have a minimum pH above 6.8 for iron alone, with a desirable pH between 8.0 and 9.0 for best results where iron and manganese are combined. Additionally, a minimum dissolved oxygen (DO) content of 15 percent of the combined iron and manganese is required to ensure the oxidation reaction, which converts ferrous (clear water) iron and manganese to ferric iron and manganese oxides. For example: 1.5 mg/L iron + 0.7 mg/L manganese equals 2.2 mg/L combined X 0.15 = 33mg/L DO. Hydrogen sulfide and oil must not be present in the water and organic content must be below 4 mg/L. Service flowrates range between 3.5-5 gpm/ft^2 and backwash rates between 10-12 gpm/ft^2, with bed expansion between 35-50 percent, depending on water temperature.

Filter-Ag

Filter-AG is a lightweight replacement for sand with an apparent density of 24-26 lbs/ft^3. This medium typically reduces suspended solids down to 20-micron range at 5 gpm/ft^2 service flow and down to the 40-micron range at 8 gpm/ft^2 service flow. Because of its light weight, it can also be used a filter cap for granular activated carbon filters where light sediment may negatively impact the optimal performance of the carbon. It remains stratified above the carbon during backwash. A 5–8-inch depth is recommended when applied as a filter cap. Backwash rate requirements are 8-10 gpm/ft^2, depending on water temperature with a bed expansion of 20- 40 percent and depending on water temperature.

Granular activated carbon

Granular activated carbon (GAC) is touted as being the work horse of the water treatment industry because of its affinity for free chlorine, chloramines, tastes and odors, color, some natural and synthetic organic chemicals. **NOTE:** Not all organics can be removed with GAC.) It is available in several mesh sizes with the most popular being 12 X 40 and 8 X 30 mesh. Use care when designing activated carbon filtration and pay close attention to the backwash rates. Both are good for average service flowrates of 4-6 gpm/ft^2 when used for protection of downstream treatment processes. Consider the required empty bed contact times (EBCT). EBCT is equal to the volume of the empty bed, divided by the flowrate. One cubic foot of activated carbon is equal to 7.48 gallons capacity (conversion factor) divided by the tank/ft^2, divided by the flowrate. For example, chloramine requires 3-4 gpm/ft^3. Therefore, 2 cubic feet in a 12-inch (.78/ft^2) diameter tank = 7.48 x 2/.78/4 gpm = 4.8 minutes EBCT. for organic reduction where flowrates range from 0.7 gpm/ft^2 for toxic organics, 1.0 gpm/ft^2 for organics, 6 gpm/ft^2 for chloramine and up to 15 gpm/ft^2 for free chlorine. Carbon has many uses, but caution is urged when designing an activated carbon system and this is where a comprehensive water analysis is invaluable. Backwash rates for activated carbon varies based on mesh size. While 8 X 30 mesh activated carbon requires 16 gpm/ft^2 backwash flowrate @ 55°F, a 12 X 40 mesh carbon requires only 9 gpm/ft^2 @ 55°F. Either mesh size requires a minimum of 35-percent bed expansion, up to 50-percent expansion, depending on water temperature.

Follow the rules

Rule #1 - accurate water analysis. An accurate and comprehensive water analysis is required to ascertain with certainty the treatability of any problem water source. Failure to obtain a water analysis is a certain recipe for disaster.

Rule #2 – confirm hydraulics. Establish the available water flow at both 30 psi and 40 psi. If the difference is more than 25 percent, counsel the prospective customer to have the well pump motor evaluated for amperage draw. If the amperage is too high, the pump motor may require replacement. If the difference is less than 25 percent, a good rule of thumb is to work with 70 percent of the available flow at 30 psi. For example, if the pump produces 10 gpm at 30 psi, design your filtration system at 7 gpm. This will allow for better system performance because the system is not working at the maximum output which will diminish over time as the pump system ages.

EXAMPLE: An 8-inch-diameter softener can easily provide a flow of 7 gpm at an acceptable pressure drop of 6-8 PSID for an average residential application. That same 7 gpm for sediment removal using Filter-Ag would require a 16-inch-diameter tank. Then consider that the backwash rate for that softener is only 1.5 gpm while the backwash requirement for the Filter-Ag is 13 gpm @ 55° F. Next consider that a water softener can operate at 20 psi, whereas a backwash filter requires a minimum of 30 psi for sufficient pressure to lift and clean the filter media. Finally, to make this application work within the hydraulic constraints of the pumping system, consider a triplex 10 X 47 media tank configuration that backwashes at 5 gpm. Using three tanks allows a clear water backwash from the online twins to provide clean water to flush away the sediments of the offline filters, followed by sequential backwash of the other filters. The benefit is faster media bed cleaning with clear water and less water to waste. Typically, the same amount of water used to clean a simplex filter using raw water will clean all three filters with the same volume of clear water.

Rule #3 – Specify. Design the system for optimal performance with the simplest configuration for ease of service and maintenance while not compromising the long-term reliability and consistent water quality your customer expects.

By Gary Battenberg

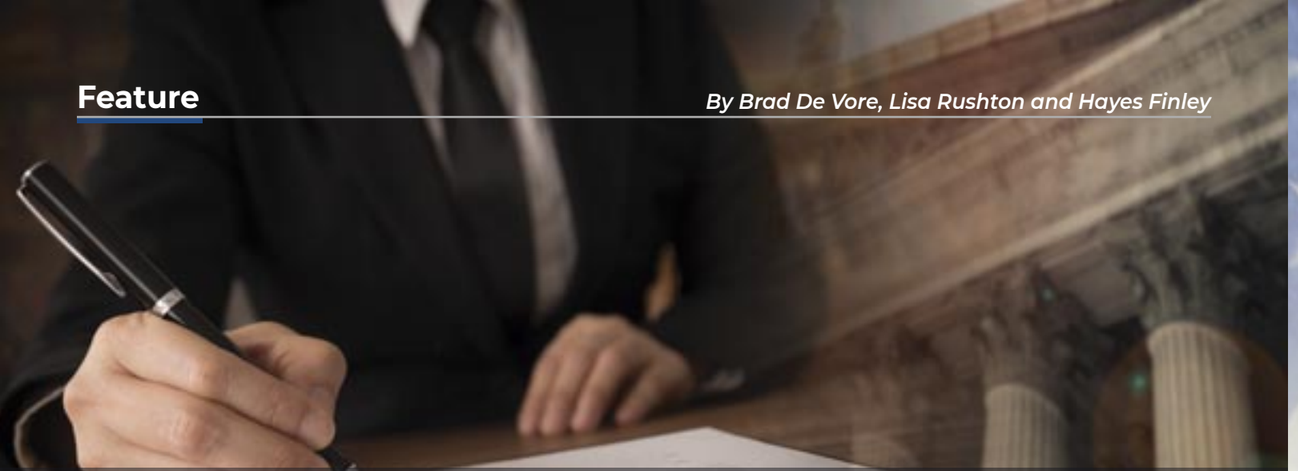
Conclusion

Always bear in mind that any filtration system will quickly fail for lack of sufficient water flow and pressure to lift and expand the media bed required by the media manufacturer for optimal water quality. In the final part in this series, we will look at the finer points of filtration. Stay tuned.

About the author

Gary Battenberg is a Business Development Manager-Senior for Argonide Corporation. Previously, he was Technical Manager, Water Treatment Department of Dan Wood Company. Prior to that, Battenberg was Technical Support and Systems Design Specialist with Parker Hannifin Corporation. His nearly four decades of experience in the water industry include a proven, successful track record in areas of sales, service, design and manufacturing of water treatment systems. Battenberg's technology base covers mechanical and adsorptive filtration, ion exchange, UV sterilization, RO and ozone technologies. He has worked in the domestic, commercial, industrial, high-purity and sterile water treatment arenas. A contributing author to WC&P International magazine and a member of its Technical Review Committee since 2008, Battenberg was voted one of the magazine's Top 50 most influential people in the water treatment industry in 2009. He can be reached by email at gary@argonide.com or by phone (407) 488-7203. WCP

By Brad De Vore, Lisa Rushton and Hayes Finley



Infrastructure Legislation Features PFAS Funding, Regulatory Focus - Which Could Lead to Increased Litigation

The primary goals of the *Infrastructure Investment and Jobs Act (IIJA)* are to create jobs, stimulate economic activity and improve the nation's long-term competitiveness by updating and upgrading America's infrastructure. But the landmark federal legislation, which was signed into law in November 2021, also seeks to fill regulatory and enforcement gaps identified by the Biden Administration. One of the most important regulatory focuses of *IIJA* is addressing the category of chemicals known as PFAS. The $1.2 trillion (USD) *Act* includes $10 billion to assist states and disadvantaged communities fund improvements needed to address PFAS in drinking water and wastewater discharges. Half of the funds go through state revolving funds.

PFAS have been called forever chemicals because they do not break down and can remain in the human body long-term. According to US EPA, PFAS may be linked to several health conditions, including infertility, immune system suppression and some cancers. Exposure to PFAS may happen environmentally, after the chemicals have been released into the air or leaked into groundwater. They also are found, however, in a wide range of consumer products—from stain-resistant carpets to non-stick frying pans to frozen pizza boxes. Since the chemicals do not decay and move readily in the environment, businesses and property owners may be liable for PFAS usage that occurred decades in the past and have migrated materially further than conventional pollutants.

To date, while many states have enacted PFAS-related guidance, PFAS largely have been unregulated under federal law and only 16 out of 50 states have adopted drinking water standards for PFAS. But US EPA under the Biden Administration has made it a point of emphasis and the funding outlay in the *Infrastructure Investment and Jobs Act* is an important next step in the Administration's comprehensive approach to regulating PFAS.

With the government turning up the heat on the regulation of PFAS, both public and private water and wastewater treatment facilities will require significant investments to begin monitoring and treating this new family of contaminants. Although funds allocated in the *Infrastructure Investment and Jobs Act* are aimed at providing assistance to state and local water systems for testing and installation of any infrastructure improvements needed to address PFAS, the assistance is unlikely to be enough. It should come as no surprise when these entities seek to offset their costs for complying with new regulatory standards through litigation against manufacturers and users of PFAS. In addition, the increased costs of addressing PFAS will drive an increase in government and private party suits against those who released PFAS into the environment. Funds from the infrastructure law will accelerate all three of these trends.

PFAS strategic roadmap sets the stage for a new era of regulation

On October 18, 2021, less than a month before Congress approved *IIJA*, US EPA announced the PFAS Strategic Roadmap - a new, three-year effort to evaluate and regulate the usage of PFAS. Among the many actions proposed, the agency calls for new federal drinking water standards to be enacted by the fall of 2023. The plan would add two classes of PFAS—PFOA and PFOS—to the list of more than 90 drinking water contaminants regulated by US EPA. In addition, the agency announced its intent to push nationwide monitoring for PFAS in drinking water and use of National Pollutant Discharge Elimination System permitting to reduce PFAS discharges into water sources.

By Brad De Vore, Lisa Rushton and Hayes Finley

Further, Congress and US EPA have expressed a clear intent to designate certain PFAS as CERCLA (also known as Superfund) hazardous substances, "to require reporting of PFOA and PFAS releases, enhance the availability of data, and ensure agencies can recover cleanup costs." This will impact nearly every site being remediated under superfund, in addition to those that have completed remediation but are subject to five-year reviews. The Office of Land and Emergency Management is expected to issue a proposed rule by spring of 2022 with a final rule expected summer 2023.

Going hand in hand with this effort, US EPA expressed an intent to expand and accelerate PFAS remediation and clean-up at other sites through enforcement and outreach. "What we have to do is move very strategically through the regulatory process, and we're going to do that in an expedited timeline," US EPA Administrator Michael Regan told *NBC News*. The PFAS Strategic Roadmap stops short of a ban on PFAS usage, which is currently under discussion in Europe. Five European nations—Denmark, Germany, the Netherlands, Sweden and Norway—recently proposed banning PFAS throughout the continent.

Other federal efforts to address PFAS

The 2021 PFAS Strategic Roadmap is US EPA's third iteration of a comprehensive plan to address PFAS. It comes in the wake of several agency actions over the last few years to study and propose new rules and regulations of PFAS.

In 2019, US EPA issued its first PFAS Action Plan, which described the EPA's first comprehensive approach to identifying and understanding PFAS, then current approaches to addressing PFAS contamination, preventing future contamination, and effectively communicating with the public about PFAS. The Action Plan described the broad actions US EPA had underway to address challenges with PFAS in the environment.

Potentially one of the most significant actions taken by the agency to address PFAS in 2019 was its issuance of a final regulatory determinations for PFOA and PFOS under the *Safe Drinking Water Act*, which kicked off the process for US EPA to develop a national primary drinking water regulation for these two PFAS. Additionally, the agency announced its intent to fast track the evaluation of additional PFAS for future drinking water regulatory determinations if necessary information and data become available and proposed to collect new PFAS data under the fifth *Unregulated Contaminant Monitoring Rule (UCMR 5)*.

In 2020, US EPA issued a PFAS Action Plan Program Update. A primary focus in 2020 was to develop reliable and consistent laboratory methods for detecting and identifying PFAS in drinking water. The agency also committed to following through with its process under the *Safe Drinking Water Act* for evaluating drinking water standards for PFOA and PFOS. In November 2020, US EPA issued a memo detailing an interim National Pollutant Discharge Elimination (NPDES) permitting strategy for PFAS. The agency also released information on progress in developing new analytical methods to test for PFAS compounds in wastewater and other environmental media.

In January 2021, US EPA announced final determinations to regulate PFOS and PFOA in drinking water and a proposal to require monitoring for 29 PFAS in drinking water under the fifth *Unregulated Contaminant Monitoring Rule*. And, in January 2021, the agency finalized *Effluent Guidelines Program Plan 14* and announced an Advanced Notice of Proposed Rulemaking to collect data and information regarding PFAS manufacturers that will help inform whether these industrial sources warrant regulation through national *Effluent Limitation Guidelines* to address PFAS discharges.

IIJA makes PFAS an environmental regulatory priority

All of these actions have influenced federal lawmakers' decision to address PFAS through *IIJA* . The $10 billion (USD) earmarked for PFAS treatment and remediation under the *Act* is the single largest allocation of PFAS funds in US history. Many more billions will be needed, however, to meet the goals outlined in US EPA's PFAS Strategic Roadmap.

The *Act* contains three distinct grant programs, all aimed at addressing PFAS:

1. $5 billion will be provided through the *Safe Water Drinking Act* to help low-income and rural communities purchase drinking water filtration systems.
2. $4 billion will be provided to water utilities for PFAS removal via the Drinking Water State Revolving Fund.
3. $1 billion will be provided to help address PFAS in wastewater discharge, with a focus on serving rural and indigenous communities.

Following the rollout of US EPA's Roadmap and goal to establish maximum contaminant levels (MCLs) for PFOA and PFOS by fall of 2022, the agency submitted research and sought feedback from the Science Advisory Board in December 2021. That body conducted four days of hearings on the proposal and raised many concerns with the agency's literature and proposed findings While US EPA continues to move forward with efforts to promulgate a National Drinking Water Standard for PFOA and PFOS, the agency must address these concerns before any regulatory action may move forward. Amy issue or question left unaddressed will be a basis for a regulatory challenge to any standard proposed by US EPA.

In the interim, municipalities and utility providers need money for the operation and ongoing maintenance of PFAS treatment and clean-up programs—money that is not provided in any current federal program. Communities are increasingly identifying potential sources of contaminated drinking water and seeking resources to fund their investigations. *IIJA* (along with other PFAS regulatory efforts) will materially kick-start these investigations and likely trigger a waterfall of subsequent litigation.

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By Rick Andrew

1,2,3-Trichloropropane Reduction Under *NSF/ANSI 53*

One of the main focuses of the NSF Joint Committee on Drinking Water Treatment Units is the expansion of the available contaminant-reduction claims for various technologies. As more and more contaminants are detected in source water and drinking water, it is highly beneficial to have American National Standards establishing criteria and test methods to demonstrate conformance of readily available drinking water treatment systems to treat these contaminants.

We have seen several recent developments for developing criteria for typical POU and POE systems to demonstrate reduction of PFOA and PFOS, nitrosamines and microplastics. Now, another test method for contaminant reduction is being added to *NSF/ANSI 53*. This newest contaminant reduction test method and criteria are for 1,2,3-trichloropropane (TCP) reduction.

TCP does not occur naturally – it is exclusively a man-made chemical. Technically categorized as a chlorinated hydrocarbon, TCP has been used in multiple industrial and agricultural applications. These include use as a paint or varnish remover, a cleaning and degreasing agent and a solvent. It is a crosslinking agent for polysulfide polymers and sealants. TCP is also used as an intermediate chemical in producing other chemical end products.

Agriculturally, chloropropane-containing soil fumigation chemicals were used as pesticides throughout the United States. Dating back to the 1940s, soil fumigation chemicals that included TCP as a minor component were marketed for the cultivation of various crops, including citrus fruits, pineapples, soy beans, cotton, tomatoes and potatoes. Newer formulations were developed in the 1950s that also contained TCP as a minor component. These formulations were used until the 1990s, when the soil fumigation chemicals were either taken off the market or reformulated to no longer contain TCP.

Environmental contamination

This widespread use of soil fumigation chemicals, along with the various industrial uses, has resulted in environmental contamination by TCP. Interestingly, TCP does not contaminate soil. Rather, it migrates through the soil into groundwater aquifers, where it ultimately moves to the bottom of the aquifer due to its density being higher than the density of water. TCP is therefore considered to be a dense non-aqueous phase liquid (DNAPL) because of its density and lack of solubility in water. This DNAPL characteristic makes it more difficult to remove from groundwater in remediation activities. TCP is also chemically stable and has very slow, natural decomposition rate, causing it to be environmentally persistent.

Impact on human health

Given this history, it is not surprising that TCP has been detected in groundwater and drinking water from wells in agricultural areas. This is concerning because TCP classified as likely to cause cancer by US EPA and it is recognized by the State of California as a human carcinogen. With this recognition as a human carcinogen, California began to regulate TCP in drinking water by establishing a maximum contaminant level (MCL) on July 18, 2017, of 0.005 µg/L, or 5 parts per trillion (ppt).

Interest in POU/POE treatment of TCP in drinking water

Due to the widespread agricultural use of TCP and the very low MCL adopted by the State of California, there are a significant number of private well owners and residents using small drinking water systems who are either known to be impacted by TCP contamination, or are concerned about it. In fact, California is implementing a statewide initiative to utilize POU and POE technologies for compliance with drinking requirements, in particular dedicating significant resources in time and financial support for small communities who need assistance. In this initiative, TCP is one of the primary contaminants that needs to be addressed based on the prevalence of violations by small systems.

Activity of the NSF Joint Committee on Drinking Water Treatment Units

At the May, 2020 meeting of the Joint Committee, information was shared regarding California's initiative to use POU and POE systems for compliance with *Safe Drinking Water Act* requirements for small systems. The Committee discussed that while TCP is one of the top contaminants that would be valuable for use of POU and POE for small system compliance violations for the state, there were no criteria or test methods to establish reduction of TCP in the NSF Drinking Water Treatment Unit standards. Accordingly, the Joint Committee formed a task group to develop criteria for the addition of a TCP reduction claim under *NSF/ANSI 53*.

By Rick Andrew

The task group reviewed available occurrence data from California and US EPA's *Third Unregulated Contaminant Monitoring Rule (UCMR3).* This review of occurrence data suggested an influent challenge level of 0.30 µg/L (300 ppt), based on the 95th percentile of occurrence. The 95th percentile of occurrence is the typical value selected by the Joint Committee for health contaminant challenge concentration. The task group further recommended a maximum allowable treated water concentration of 0.005 µg/L (5 ppt), based on California's state MCL.

Further, the task group supervised laboratory work that validated the performance of third-party certified POU systems, selected because the systems had certified VOC reduction and PFOA/PFOS reduction claims under *NSF/ANSI 53*. This laboratory work was successfully completed late in 2020. Upon completion of this work, the task group brought their recommendations to the Joint Committee, who in turn approved the recommendations of the task group through a formal ballot process to establish the criteria and test method for TCP reduction under *NSF/ANSI 53*.

Test method

The test method for TCP reduction under *NSF/ANSI 53* is the method used for reduction of all organic contaminants. The test water used is the General Test Water (see Figure 1). The influent challenge level and maximum effluent concentration, as described above, are summarized in Figure 2, which includes information regarding variation allowed for each influent sample point and for the average influent throughout the test, as well as indicating what US EPA analytical methods are used.

pH	7.5 ± 0.5
Temperature	20 ± 2.5° C (68 ± 5° F)
Total dissolved solids	200 to 500 mg/L
Total organic carbon	> 1.0 mg/L
Turbidity	< 1 NTU

Figure 1. *NSF/ANSI 53* General Test Water
A public water supply shall be used with the following specific characteristics maintained throughout the test. Methanol shall be used as the solvent when needed to introduce a contaminant to the test water.

Substance	Individual influent sample point limits (mg/L)	Average influent challenge (mg/L)	Maximum effluent concentration (mg/L)	US EPA Method(s)
1,2,3,-trichloropropane	0.0003 ± 30%	0.0003 ± 10%	0.000005	504, 524

Figure 2. TCP reduction.

The test is conducted using a 20 minute cycle, which is normally 50-percent flowing and 50 percent with flow turned off. This cycle can be altered to 10-percent flowing and 90-percent with flow turned off at the discretion of the manufacturer. Two POU or POE test systems are tested in parallel, with samples of the influent and effluent collected at start-up, 50, 100, 150, 180 and 200 percent of the manufacturer's rated treatment capacity. For systems with a performance indication device (filter change indicator), samples are collected at start-up, 25, 50, 75, 100 and 120 percent of the manufacturer's rated treatment capacity. All samples must meet the requirements for a passing result.

Continuing to meet needs

Treating drinking water contaminated with TCP by POU and POE technologies in small communities in California was a need identified by the NSF Joint Committee on Drinking Water Treatment Units. The Joint Committee responded by developing new criteria and test requirements to evaluate these POU and POE systems to effectively treat drinking water with TCP contamination. As with other emerging contaminants, the Joint Committee will continue their work to advance the NSF Drinking Water Treatment Unit Standards to enhance their relevance as valuable tools to help improve the quality of drinking water.

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About the author

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By Emma H. Peterson

“Basically, We’re an Innovation Factory”

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It was a ground-breaking year in 1976 for the water filtration industry, though many may not know it. That was the year Dr. Evan Koslow (then a student at Yale University) and his peer founded KT Corporation. Since the company’s conception, the industry has received some of the most advanced technology ever created. Today, KT Corporation is making these technologies mainstream.

Following time at Yale and Cornell Universities, Dr. Koslow worked as a scientist at the well-known, high-tech filter company Pall Corporation, working on the development of hydraulics and lubricating filters for commercial, military and aerospace applications. It was here that he received his first training in the field of filtration. Dr. Koslow later became the Technical Director for the development of nuclear, biological and chemical defense equipment at Pall as well as providing technical support to several military divisions.

Emerging from Pall Corporation, Dr. Koslow led the development at KT Corporation of extruded activated carbon blocks in a partnership with EXXON Chemical Company, later forming KX Industries in 1989. KX Industries ran with this for many years and was later sold to Berkshire Hathaway/Marmon group in 2006, of whom they are a part to this day.

KT Corporation is responsible for a vast number of technologies on the market today. “We’re a real innovation hub. We’re the inventor of not just the extruded carbon, which is now the basis for a very large percentage of the industry, but we also created the first refrigerator filter in 1996 with Frigidaire and the first health-claim end-of-tap filter for PUR.” Dr. Koslow was also the inventor of the filter medium currently used in Brita’s high-performance products. On top of this, Koslow was the inventor of the KYBLOCK binder system and, of course, the scale control resin ScaleStop that doesn’t need to be regenerated with salt and is now widely sold as an alternative for water conditioning.

Dr. Koslow holds almost 90 patents and is the inventor of over a hundred consumer products. “We’re behind all kinds of technologies that people don’t even realize,” he said, “We work on all levels. We invent the raw materials from which everything is made... for example, we make the bulk nanofibers and metals adsorbent used in FUSION filters. We also create the processing plants and machinery used to manufacture these raw materials, the complete filters and even complete water purification systems.” KT Corporation provides expertise and consulting in the fields of carbon block production, formulation of carbon blocks and the development of critical new raw materials such as catalytic carbons, nanofibers, scale control resins, toxic-metal adsorbents and filtration media. Today the company is operating from a 45,000-square-foot facility in Waterbury, CT and a 15,000-square-foot R&D facility in Watertown, CT.

KT Corporation is a privately held, family-owned business. Many of the employees have been with Dr. Koslow for over 20 years and it is a small close-knit group. Two of Dr. Koslow’s four sons also work at the company. Jules Koslow now leads new product development and marketing while Benjamin Koslow carries out new product prototyping, testing, and development.

Despite joining the business only a couple years ago after COVID-19 ended his career in New York City, Jules has already submitted for his first patent on Delta technology, ultra-compact water purifiers. He originally entered KT Corporation in marketing, but the longer he worked there, the more inspired he became and he switched to product development. Jules explained that “I was sitting at my desk thinking about how we can get this product (FUSION Filter media) out to as many people as we can around the world who lack clean water and I took a sheet of this amazing filter paper and folded it to make a weirdly-shaped funnel. The resulting DELTA product can be folded to a tiny device that takes out virus, bacteria, toxic metals, organic compounds -- just about anything you can throw at it.”

> “We’re a real innovation hub. We’re the inventor of not just the extruded carbon, which is now the basis for a very large percentage of the industry, but we also created the first refrigerator filter in 1996 with Frigidaire and the first health-claim end-of-tap filter for PUR.”

His goal with this invention is to get clean water to people who are suffering from the impact of a disaster or for the army, but it can also be used by hikers, campers, etc. “It has amazing geometrical advantages,” Dr. Koslow said, “FUSION Filter media can be manipulated to form amazing new products and even a few grams can match the performance of full-sze carbon blocks.”

Dr. Koslow’s latest invention, FUSION, is a filter medium that he calls 'carbon block on a shingle,' but it’s actually not a carbon block at all. Made at a paper mill using proprietary nanofibers produced by KT Corporation, this small piece of filter paper has all the power of a carbon block and more, while weighing only several grams. The new FUSION filter medium consisting of Electrokinetic Nanofiber Composite to provide a combination of microbiological, organic chemical, toxic metal and comprehensive aesthetic purification of water in a single flexible water filter medium. This new material is nearly 10 times more efficient than current carbon block with very small filters providing extended life, performance, and economics.

Dr. Koslow jokes that some FUSION filters are so small and light that “If you let go of it, it will float to the ceiling.” To manufacture FUSION Filter paper, a pulp is made at KT Corporation and converted to paper at a paper mill. “A carbon block extruder makes roughly one of these (carbon blocks) a minute, but our new process produces 600 flat-sheet filters per minute and they are vastly more powerful,” he said. “Fast production, low cost and capable of meeting every health claim imaginable.” Though not marketed broadly yet, the company plans to be mainstream with this product by the end of 2022.

“We’re working with companies to take our technology forward to the market. It’s a versatile medium that can be made into myriad products,” Jules said. Carbon block has been the standard for 30 years, but they are produced by a slow process compared to FUSION technology. “When we invented carbon block extrusion, you could manufacture millions of filters. In this early case, we evolved carbon block production from a few hundred thousand filters a year to factories making tens-of-millions. We commoditized carbon block and changed the entire industry. FUSION technology permits the next quantum leap to producing tens-of-millions of filters in a week, not a year.” Dr. Koslow said.

In the next few years, KT Corporation plans to greatly expand its filter raw materials, FUSION filter media and finished filter manufacturing operations. The company has traditionally developed these powerful technologies and eventually sold these assets to strategic buyers. The Koslows plan to continue this basic business development model. Being “an innovation and scale up factory,” according to Dr. Koslow.

“The economics of off-shore production have deteriorated and supply chain risks have increased. Transportation costs are sufficiently high as to threaten the economics of imports,” Dr. Koslow said. “For this reason, there is a new interest in establishing world-class manufacturing in the United States and KT Corporation sees this as an enormous opportunity. The company has been involved in the development of products that represent billions of dollars at retail and intends to continue such contributions into the future.”

KT Corporation is one of the few companies in the potable water industry that develops fundamentally new technologies and ideas that lead to new opportunities. With so many new products in the making, one can expect KT Corporation to continue on their impressive track record for years to come. “Don’t be surprised if you start seeing flat sheet filters on the shelves soon!” Jules said.

About the author

Emma H. Peterson, author of WC&P International's corporate and dealer profile series, is a student at the University of Arizona, majoring in journalism, with a minor in natural resources. Throughout her college experience, she has developed a following for her photography and photojournalism endeavors. After graduation, Peterson intends to broadly expand her creative/feature writing and photography prospects, as well as pursue her personal interests in skiing and rock climbing. WCP

What's New

Filtration system and media solution

ENPRESS LLC introduces its E3® Filtration System with an Integrated Bypass that utilizes industry standard threaded fitting kit connections to simplify installation by plumbers and water treatment dealers and streamline field-installation inventory requirements. This system comes standard with one-inch MNPT elbow or straight connectors to the bypass and requires no gluing. An Umbrella Cap® is now included with every system, along with a 0.375-inch Parker® fitting and shut-off integrated into the inlet side to allow rapid tubing connection for draining of the system of sediment and water during filter change out. The connection system is compatible with all existing Enpress POE filters and the forthcoming NSF/ANSI-certified metered systems for the removal of lead/PFAS/cysts and arsenic. The ENPRESS Cartridge Tank®is a superior alternative to small and inefficient traditional 2.5- or 4.5-inch housings or expensive stainless steel cartridge housings and is an *NSF 61*- and *44*-listed device. The company's SILVER SERIES melt blown residential/light commercial filtration solutions are designed for the E3® Filtration System. They are high flowrate sediment filtration solutions for service flowrates up to 50gpm (189 L/m). The filters have significant surface area, low pressure drop and high flowrate capabilities and are ideal as polishing or pre-filters in applications requiring depth filtration for fine soft particulate filtration.
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info@enpress.com

Commerce platform system

Monittor, Inc. introduces its schematic-based e-commerce platform specifically for the water industry. It connects manufacturers directly to their installed base to handle all aftermarket transactions. This can help free up a quarter of the service team's time spent on administrative and manual processes, grow customer retention by three times and increase wallet share by approximately 30 percent. It allows manufacturers to offer custom storefronts to end users or distributors through a self-service e-commerce portal that is quick and easy to implement.
www.monittor.com • sales@monittor.com

Foot valve

Flomatic Valves introduces its latest model of American Iron and Steel (AIS)-compliant foot valve flapper-style, swing check valve, the Flo-Flex® Model 345. It is designed to meet the needs of demanding industrial and municipal pumping applications and centrifugal pump applications including ponds and lakes, dewatering applications, frac pits and more. Available in sizes 3- through 12 inches (76.2- through 304.8-mm), the Model 345 is designed according to *ANSI/AWWA C508* standards and is constructed in a corrosion-resistant, fusion-bonded, epoxy-coated ductile iron body, featuring a 316 stainless steel strainer and class *ANSI 150* flange connections. Its screen open flow area is over three times the open area of the nominal area pipe size, while the one-piece molded disc allows 100-percent full flow in the open position.
www.flomatic.com.

Pool additive

Lo-Chlor® L.L.C. introduces Salt Master™ to its Performance Pool Chemicals line. Salt pools need salt-specific additives to run optimally and efficiently. Just one weekly dose reduces the need for acid, boosts performance and decreases the frequency of necessary balance adjustments and cell cleanings. This additive keeps equipment in top shape and lengthens the life of salt chlorine generators. The special formula prevents scale buildup on generator cells, pool equipment and surfaces.
https://lo-chlor.com/ WCP

Classifieds

Classified rates are $1.95/word; $78 minimum. Classified display ads billed at $80/column inch. Additional $20 for web-page advertising for one month. Add $5 for blind-box number; inquiries to be forwarded by the publisher. Deadline: first week of the month preceding publication. Contact Patsy Parker-Kettle at pkettle@wcponline.com or (520) 323-6144.

EMPLOYMENT

EXPERIENCED SALES - SERVICE PROFESSIONALS

ProChemTech (www.prochemtech.com) would like to establish a sales-service presence in Virginia and Philadelphia, PA. Our business is primarily boiler and cooling water chemical treatment and equipment. Aqua Ionic technology, patented, provides substantial reduction in cooling tower water use, elimination of scale and control of *Legionella*. We are looking for ambitious, experienced sales-service persons to be District Managers. Local residence and knowledge of business in each area requested.

The Company offers a base salary appropriate to the skill level of the employee with an uncapped commission calculated as 10% of profit on sales. In addition to a salary and commission, the Company also provides paid vacation and holidays, fully paid family medical (no dental or eye) coverage, matching 401 K plan and a vehicle. All sales expenses are paid.

Contact us by e-mail:
prochem@prochemtech.com.

EMPLOYMENT

CULLIGAN WATER

Culligan water of Bozeman, MT is seeking to fill the following positions. This 40-year family business is in the fastest growing markets in the US. We serve the entire SW Montana with 20 employees.

GENERAL MANAGER
This position would consist of sales and over seeing day in and day out operations. This opportunity has the potential of a six figure income, plus our benefits package.

INSTALLERS AND SERVICE TECHNICIANS
These positions are needed for the future growth SW Montana. Income is DOE. $25.00-$40.00 per hour.

Please send resume to:
markh@culliganofbozeman.com

FOR SALE

SPECIALTY WATER COMPANY

34-year-old water treatment business with over 8,000 customers. Owner will stay on for 6 to 12 months to break new owner in. Company in Western Pennsylvania can be bought with or without building. There are no rental units out but people are replacing units all the time. Excellent customer base and referrals.

Serious inquiries only.
Call 724-972-6600 ask for Tony.

5-GAL WATER BOTTLING PLANT FOR SALE

Start bottling immediately: 100 bph. Includes auto-bottling machine, UV, 2,500 gpd RO, pumps, manuals, video. $24,500.00.

Call Bill @ (614) 843-8491

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- Rapid growth opportunities as work is currently being turned away, without paid advertising.
- Sale includes all vehicles, warehouse and office equipment and inventory.
- Ownership willing to stay on staff for a predetermined time period.
- Company is debt free.
- No real estate is involved in transaction.
- Financial terms and logistics of the deal are negotiable.

For serious inquires only, contact:
Ads@wcponline.com

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